



Express Mail No. EV 773 542 514 US

PATENT APPLICATION
Docket No.: 6300.103

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|-----------------------|--------------------------|------------|
| In re application of: | |) |
| | |) |
| | McClane et al. |) |
| | |) |
| Serial No.: | 10/040,883 |) Art Unit |
| | |) 3737 |
| Filed: | January 7, 2002 |) |
| | |) |
| For: | METHOD AND APPARATUS FOR |) |
| | RAMAN IMAGING OF MACULAR |) |
| | PIGMENTS |) |
| | |) |
| Confirmation No.: | 8869 |) |
| | |) |
| Customer No.: | 022913 |) |
| | |) |
| Examiner: | Baisakhi Roy |) |

DECLARATION UNDER 37 C.F.R. § 1.131

I, Werner Gellerman, declare as follows:

1. I am a co-inventor of the invention claimed in the above-identified patent application.
I am employed by the University of Utah, the assignee of the above-identified patent application.
2. During my employment at the University of Utah, and prior to June 28, 2001, I (along with my co-inventors) conceived and reduced to practice in the United States the methods and devices for imaging the spatial distribution and concentration level of pigments as described and claimed in the above-identified patent application. Copies of invention disclosure documents


describing and showing various inventive concepts of the presently claimed invention and their reduction to practice are attached hereto as Exhibit A.

3. All of the claimed embodiments of the invention were conceived and reduced to practice prior to June 28, 2001.

4. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful, false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated this 3rd day of NOV. 2005.

Inventor:


Werner Gellerman
1360 E. Kensington Ave.
Salt Lake City, UT 84105

CONFIDENTIAL INVENTION DISCLOSURE

INVENTION NAME: _____
Method and System for Raman Chemical Imaging of Carotenoids and Related Compounds
in Living Human Tissue

| Inventor | Department | Campus Address | Position | Phone | Fax |
|-------------------|------------------|----------------|-------------------|--------|--------|
| ROBERT MCCLANE | LARGE INSTRUMENT | 220 DISCC | RESEARCH ENGINEER | 1-7001 | 5-3098 |
| Werner Gellermann | Physics | 201 JFB | Res. Prof | 1-5222 | 1-4801 |
| | | | | | |
| | | | | | |

Brief Summary of Invention (paper, fuller descriptions, etc., should be appended, but please also give a brief summary):

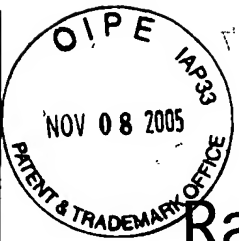
This invention facilitates simple and low cost acquisition of massively parallel spectroscopic data based on the resonant Raman effect. The resulting data forms high spatial resolution images based on the concentration and distribution of selected chemical compounds. The invention should have clinical utility in the area of non-contact, non-invasive diagnostics of certain diseases.

Practical and Commercial Applications:

The concentration and distribution of certain carotenoids and related compounds are postulated to be indicative of the presence or risk of various diseases, thus the invention may be used as a diagnostic tool to quickly and painlessly screen for these diseases, or follow the effectiveness of their treatment.

Advantages over State-of-the-Art:

In the case of carotenoids, the only way presently to measure concentration is to use HPLC chemical analysis, which requires large volumes of biopsied tissue and tedious sample preparation. Additionally HPLC as well as traditional Raman spectroscopic methods are inherently single point measurements, and hence cannot produce a useful concentration map or image. The invention also is substantially lower in cost than traditional Raman spectroscopy instrumentation.

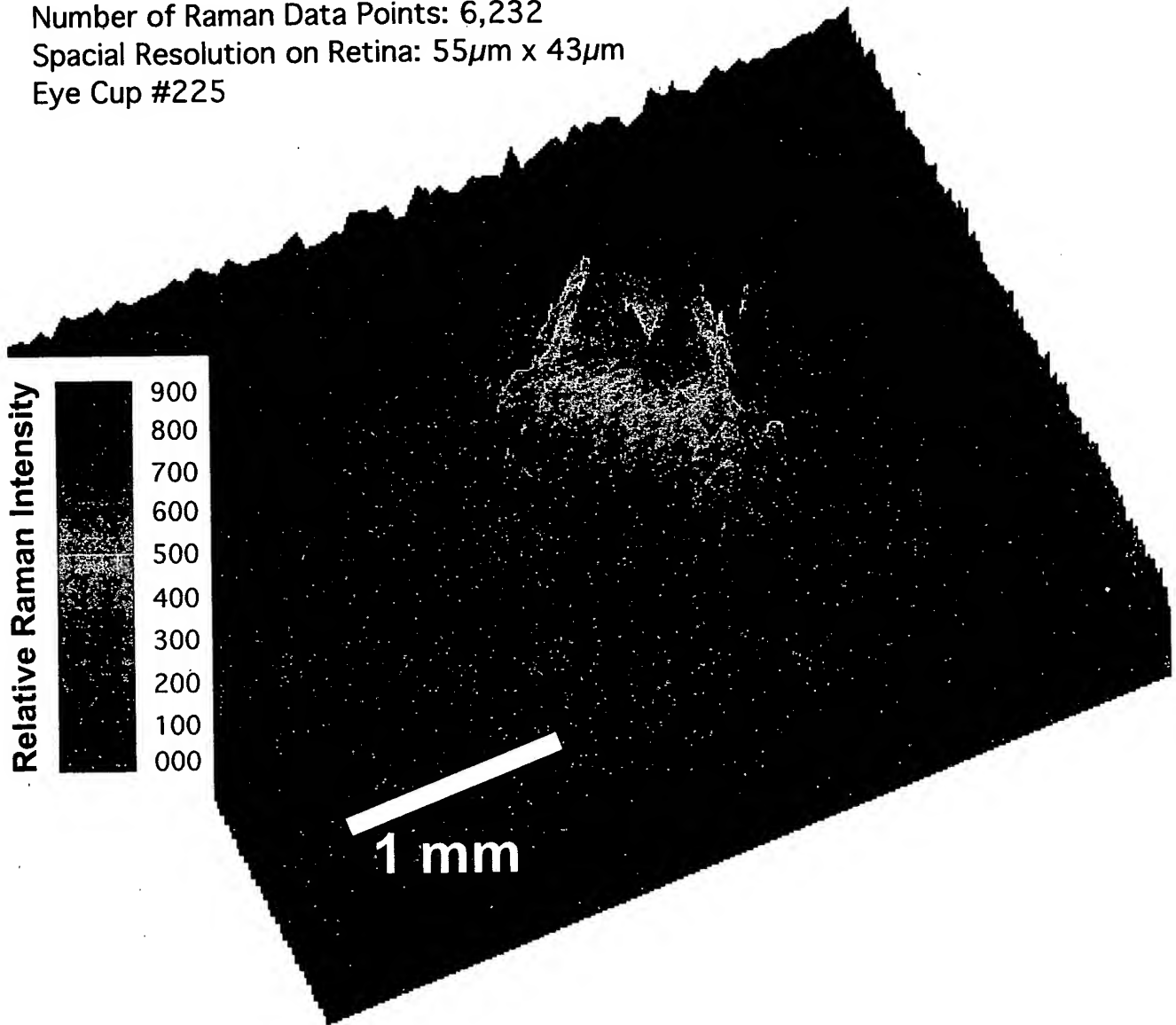


Raman Image of Human Fovea Showing Macular Pigment Distribution

Number of Raman Data Points: 6,232

Spacial Resolution on Retina: $55\mu\text{m} \times 43\mu\text{m}$

Eye Cup #225

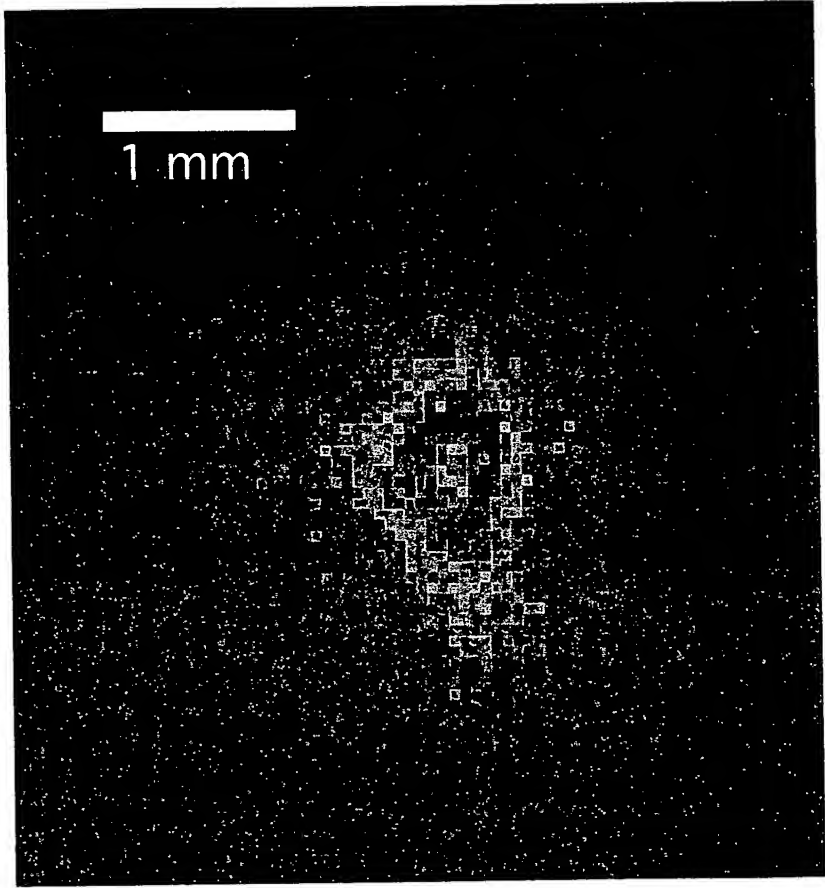
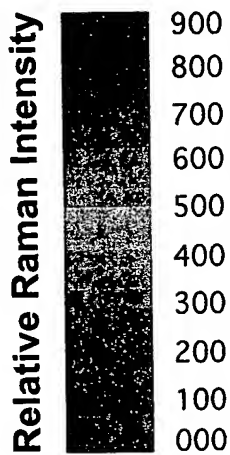


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Raman Image of Human Fovea Showing Macular Pigment Distribution

Number of Raman Data Points: 6,232
Spatial Resolution on Retina: 55 μ m x 43 μ m
Eye Cup #225



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